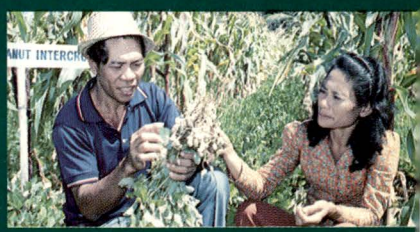
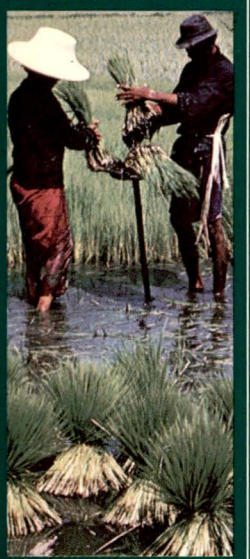
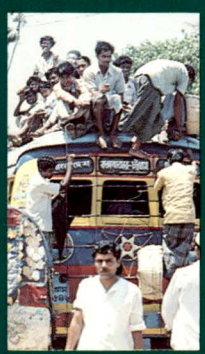
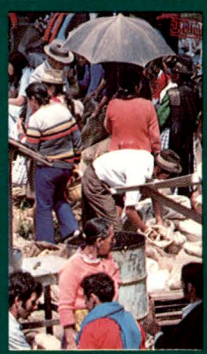
Searching

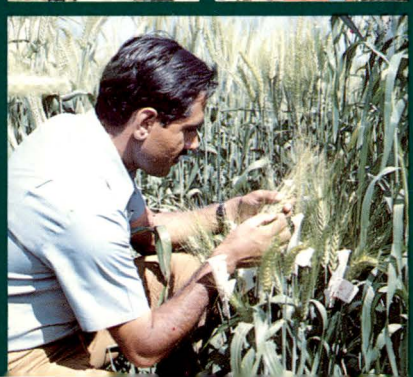
Review of IDRC Activities 1980...











and a look back at IDRC's first decade 1970–1980

IDRC-164e

INTERNATIONAL DEVELOPMENT RESEARCH CENTRE
CENTRE DE RECHERCHES POUR LE DÉVELOPPEMENT INTERNATIONAL
CANADA

Postal Address: Box 8500, Ottawa, Canada K1G 3H9
Head Office: 60 Queen Street, Ottawa, Canada

IDRC, Ottawa CA

IDRC-164e

Searching: review of IDRC activities 1980 . . . and a look back at IDRC's first decade 1970–1980. Ottawa, Ont., IDRC, 1981. 40 p. ill.

/IDRC publication/, /IDRC/, /institutional framework/, /research programmes/—/research projects/, /agricultural research/, /nutrition research/, /information sciences/, /social sciences/. /health sciences/, /annual report/, list of publications.

UDC: 061.1(71): 341.232 ISBN: 0-88936-287-4

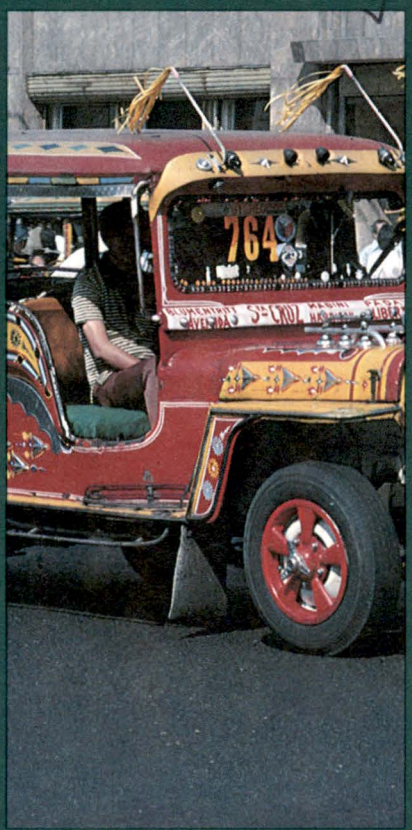
Microfiche edition available

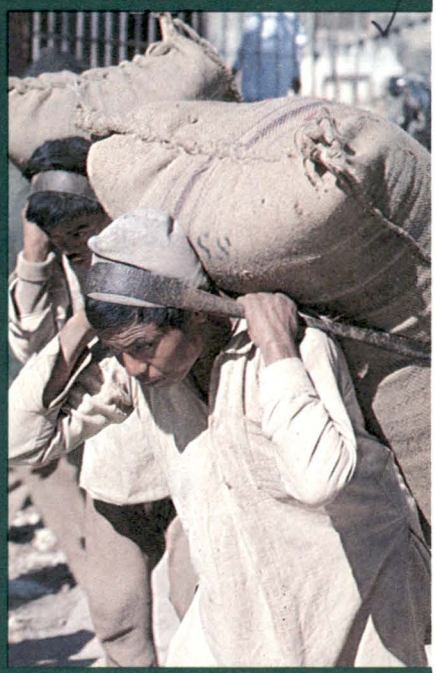
Il existe également une édition française de cette publication.
La edición español de esta publicación también se encuentra disponible.

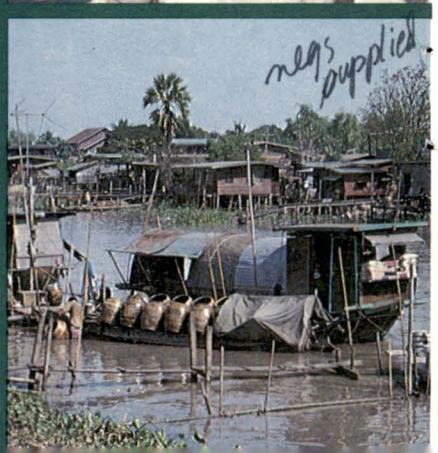
Searching

Review of
IDRC Activities
1980 . . .
and a look
back at IDRC's
first decade
1970–1980

Contents

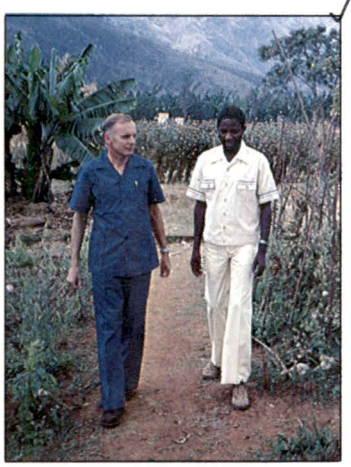

764




negs supplied

This report marks the tenth anniversary of the founding of IDRC. The Centre came into being on the eve of the United Nations Second Development Decade. The commencement of that decade was heralded, and its record chronicled, by two World Bank commissions. The earlier commission, chaired by the late Lester B. Pearson, termed international development "a great challenge of our age." The later commission, chaired by Willy Brandt, speaks of the present "crisis" and the need to "avert catastrophe."

The contrast of environments—1970 and 1980—cannot be more dramatically described than in the titles of these two reports. Pearson: "Partners in Development"; Brandt: "North–South, A Program for Survival." The message of Pearson was one of confidence that change would ensue; the recommendations focused primarily on a larger transfer of resources. The message of Brandt is far from confident: worldwide catastrophe threatens; the recommendations call for major structural reforms in the international community.



IDRC President Ivan L. Head visiting cropping systems project in East Africa.

Development can be regarded no longer simply as a challenge; it is the dominant factor in contemporary world events. The economic future of the industrialized countries depends now—as it did in 1870 and in 1929—upon growing overseas markets, largely in the developing countries. The equilibrium of the biosphere is faced now—as it has never been faced before—with irreversible destruction as deforestation and pollution relentlessly spread. The survival of mankind is threatened—more credibly than at any time in history—by nuclear arsenals and by conventional armament stockpiles in the possession of regimes ravaged by political instability.

Pearson argued that in the simplest of terms development was an imperative because "it is only right for those who have to share with those who have not."

Brandt added a critical argument: "To diminish the distance between 'rich' and 'poor' nations, to do away with discrimination, to approach equality of opportunities step by step, is not only a matter of striving for justice, which in itself would be important. It is also sound self-interest, not only for the poor and very poor nations but for the better-off as well."

Self-interest. Economic self-interest. Ecological self-interest. Political self-interest. The moral imperative of survival.

The Pearson Commission Report was in many respects a seminal inspiration for IDRC policies. Mr Pearson became the first Chairman of the Board of Governors. One of his distinguished commission colleagues, Roberto Campos of Brazil, joined him on the first Board. The Pearson Report found that research within developing countries was practically nonexistent and that as a result scientific and technological achievements remained the sole prerogative of the industrialized countries.

Maurice Strong, who was both the inspiration and the chief architect of the Centre, argued persuasively that research had not been an element in developmental assistance programs because of its long-term nature and the inherent risks contained in research undertakings. The creation of IDRC by the Parliament of Canada was intended to overcome those problems by providing both independence and some certainty of funding.

In this quest, stamina is a major requirement. Research activity, especially in the biological sciences, often requires lengthy involvement before results are achieved. The enhancement of human and institutional capacity is a time-consuming process even in the most technologically advanced societies. In those countries that are painstakingly crossing the threshold from bronze-age to space-age, accomplishment cannot be expected in regular annual increments.

In 1980, the raison d'être of the International Development Research Centre remains as pressing, and the demand for its activities as high, as at the time of its birth. Research, whether described as "developmental" in nature, or "pre-investment," continues to be regarded increasingly by both North and South as an absolutely essential element in the economic and social processes.

Ivan L. Head
President, IDRC

The International Development Research Centre is an institution quite unlike any other. Both in terms of its role as a Canadian quasi-governmental organization, and in the international context, it has never quite conformed to any of the standard definitions.

The Centre is, in the words of its first chairman, the late Lester B. Pearson, "something that is unique in international organizations." This uniqueness is no accident, the Centre was designed to be different.

Recognizing the sensitivity and the essentially high-risk nature of development research, the architects of the IDRC Act created a remarkably flexible organization—a government-funded public corporation that has no parallel in Canada. What distinguishes it most is its Board of Governors. Composed of 11 Canadians and 10 members from other countries (six of whom are usually from developing countries), this Board approves all major projects and sets the Centre's policy directions.

At the international level what distinguishes the Centre from other government or non-government development agencies is its approach. Since its inception the Centre has operated on the assumption that the best people to decide what the developing countries really need are the people of those countries, and that research aimed at meeting those needs is best carried out by scientists of the developing world. Ten years ago it was a fairly revolutionary approach. Even today it is still unusual.

At their first meeting in October 1970, the Board of Governors agreed that the primary "target group" of IDRC-supported research should be the rural poor, especially in the semi-arid tropics, where the rural people are at greatest risk, and in greatest need. Throughout the Centre's first decade these two guidelines have remained constant.

The Centre's project grants are administered by four program divisions: Agriculture, Food and Nutrition Sciences, Health Sciences, Information Sciences, and Social Sciences. The work of these divisions is described in more detail in the next chapter of this Review.

The Board of Governors meeting in October 1980: ten years of service.

Over the years there have been some changes in the structure and responsibilities of the program divisions, but the basic structure has remained unchanged during the Centre's first decade. During 1980 the first steps were taken to establish a new program.

This move is part of the Centre's response to a commitment made by the Canadian delegation to the United Nations Conference on Science and Technology for Development in Vienna in 1979. Canada promised funds for a program to enable the developing nations to share in Canadian

research and development expertise. IDRC was asked to undertake this new program by the Canadian government, an invitation accepted by the Board of Governors "on the clear understanding that the independence of the Centre not be weakened."

Canada's pledge at UNCSTD was made in response to a proposal by developing countries that a portion of the domestic research and development capacity of developed countries be applied to the solution of developing country problems, such application to be undertaken as far as possible through cooperative arrangements. Funds for this program of collaborative research will be separate from the Centre's regular budget, and will begin to flow in April 1981.

After careful review within the Centre it was decided that part of the funds would be reserved for collaborative research within the areas of concentration of IDRC's four established program divisions; the rest of the funds would be used to support cooperative research programs in fields where Canada's research and development capacity matches developing country requirements.

As this program grows, and gives the Centre a new set of development responsibilities, there will be no deviation from the principle of responsiveness to the needs of developing countries as defined by them. Every effort will also be made to ensure that the structure of cooperative relationships between the research communities of Canada and developing countries will strengthen the capabilities of the latter.

The rural poor are the primary "target group" of IDRC-supported research projects; they are at the greatest risk.

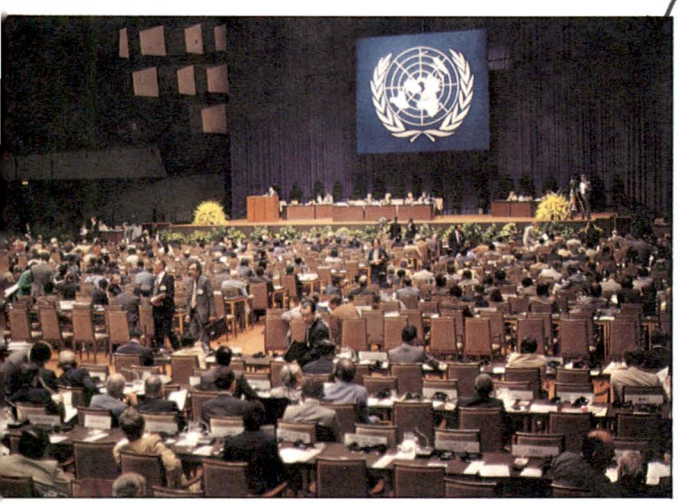
In preparation for this activity, a Cooperative Programs Unit was established as part of the President's Office in August 1980, and a series of consultations was opened with Canada's research community. The fact that planning for the new program had begun was also made known to developing country institutions. Response from both quarters was encouragingly positive. Canadian researchers welcomed the opportunity to link their expertise with the needs of developing countries in research partnerships. Developing country institutions saw in the proposed new program an opportunity to give the North–South relationship a tangible new dimension.

The need to build a stronger scientific research capability in the developing countries underlies all of the Centre's activities. Indigenous research competence is gained by engaging in research. In addition, most Centre-funded projects include provision for both formal and field training, particularly for the younger researchers, with a view to providing a core group capable of carrying on the work once the initial project is completed.

Beyond this it was felt there was a need to provide funding for promising individual

researchers, even though they might not be directly associated with any Centre-supported project. To meet this need the Human Resources Program was established. Recently re-named the Fellowships Program, it has accounted for almost $14 million during the past 10 years, providing opportunities for scientists at all levels to acquire or upgrade their skills in the broad field of international development. In addition the Centre contributes to a number of internationally funded scholarship programs, such as SEAPRAP—the Southeast Asia Population Research Awards Program.

This same open approach is carried through at the administrative level too, where the basic philosophy is that the purpose of an administrative infrastructure is to support the research activity—not to police it. Subject to the basic premises of accountability, every effort is made to keep the administration of project funds as flexible as possible, always keeping in mind the difficulties facing many struggling research institutions in developing countries.



UNCSTD: demanding a fair share of research and development.

An example of this responsive style of administration was a workshop hosted by the Centre's Asian regional office in 1979. Finance officers, coordinators, and administrators from institutions receiving IDRC grants were invited to spend two days discussing project funding and airing their problems. The outcome was a booklet on project budgeting and administration that provides answers to many of the questions raised, and is now in wide use.

Although the Centre's headquarters are in Ottawa, and all its programs operate from there, it was recognized very early that, to paraphrase one of the program directors: a desk in Ottawa is not the ideal place from which to develop an effective program of research intended to benefit the least fortunate people of the Third World. For this reason the Centre established regional offices, both to provide a working base for some of its program staff and to ensure that the Centre remains in close touch with those areas of the world it is attempting to serve.

By 1973 there were regional offices in Singapore, serving the Asian region; in Bogota, serving Latin America and the Caribbean; and in Dakar, serving West Africa. The following year a regional office for the Middle East and North Africa was opened in Beirut—shortly before the outbreak of hostilities there. The office was subsequently re-established in Cairo. In 1976 a fifth regional office was established in Nairobi, serving East and Central Africa. This office was temporarily closed in 1978 as a result of a government freeze on the Centre's annual grant, but was re-opened in October 1980.

Most of the directors of the regional offices have been drawn from the region served by each office, and many of the professional staff are also recruited from the regions. In recent years the regional offices have been given increasing responsibilities, and in some cases a degree of autonomy that allows considerable freedom of action in many administrative and financial areas. Regional Directors are also members of the Centre's Management Group.

This decentralized structure not only enables the Centre to have a closer working relationship with the governments, scientists, and research institutions of the Third World, it also ensures that the needs and aspirations of the regions are always a factor in the decision-making process.

The Centre's four program divisions have been responsible for a total of 1019 projects with grants amounting to $180 million since the first projects were approved by the Governors in 1970.

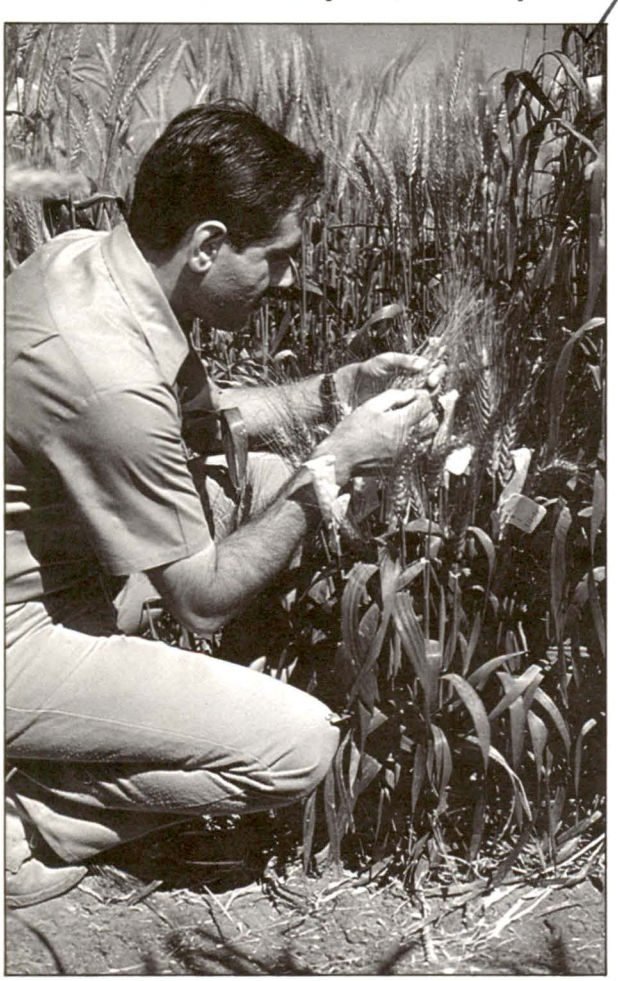
The text that follows gives a brief account of the activities of each division during 1980 in the perspective of the Centre's first 10 years.

Agriculture, Food and Nutrition Sciences

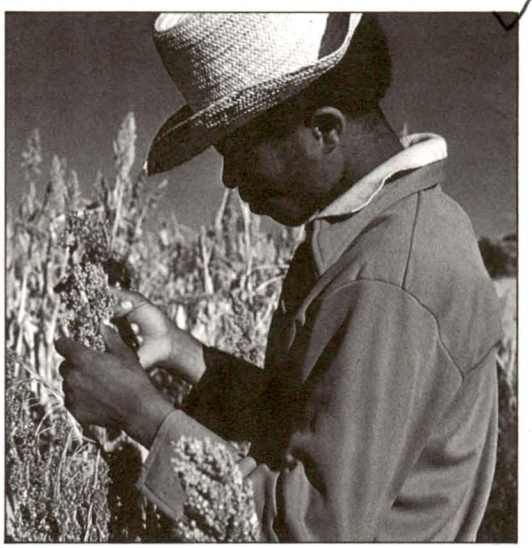
Since its beginning the AFNS program has concentrated much of its resources on research to improve the traditional crops of the developing countries, crops that until then had been virtually ignored by agricultural scientists. One such crop is sorghum, the single most important cereal of the semi-arid tropics.

Back in 1972, the division began supporting sorghum improvement projects in Senegal, in West Africa, and Ethiopia, in the East, aimed at not only developing better varieties of sorghum, but at developing a cadre of African research scientists to carry on the work. Both projects are now in their third and final phase, to develop agronomic packages that give stable yields with the new varieties under farm conditions. Perhaps most important, this phase of the work will be carried out solely by African researchers, many of whom received their training in the earlier stages of the projects.

By contrast, triticale is a new grain. One of the first successful intergeneric hybrids ever produced, it was developed by scientists in Mexico and Canada, and has been receiving IDRC support since the Centre's inception. A cross between wheat and rye, triticale is a nutritious grain that can resist drought, poor soil, high altitudes, and low temperatures. The Centre continues to support research to adapt triticale to different developing regions.



Triticale: a successful cross between wheat and rye.



Sorghum breeding in Ethiopia develops new varieties.

Barley is another traditional crop that has received inadequate attention from agricultural scientists. In Turkey, where barley is the second most important crop, Turkish researchers are working with cereal scientists at international agricultural research centres in Mexico and Syria to improve both the quality and quantity of barley. It is expected the results will be applicable in other Near Eastern countries where barley is common.

The Andean region of Latin America is the home of many traditional crops, perhaps the best known and most widely

traveled of which is the potato. There are others, however, many of which are virtually unknown outside the region. In Peru, a Centre grant has brought together three separate university research projects to study traditional crops in a major effort to raise the standard of living of the small-scale farmers of the high Andes through improved farming systems.

Another root crop thought to have originated in this region is cassava—also known as manioc or tapioca—which is now a staple in many developing countries. As part of its continuing support for cassava research, the division approved a project to collect wild, previously uncultivated, species in northeastern Brazil and screen them for economic and other desirable characteristics. Such projects not only improve crops, they increase the plant genetic pool available for future breeding programs.

One of the division's most successful programs to date has been the cropping systems network it helped to establish and support in Asia. Multiple cropping, scientifically practiced, can greatly increase the food production potential of a given piece of land and make more effective use of labour and other resources. Multiple cropping is familiar to many smallholder farmers in Latin America, and the division is now using its Asian experience to help establish a research network that will seek to adapt the lessons learned in Asia to multiple-cropping projects in Colombia, Costa Rica, and Honduras.

Quinoa is one of the traditional crops of the High Andes.

Multiple cropping in the Philippines increases production.

An experimental plantain crop in Cameroon, West Africa.

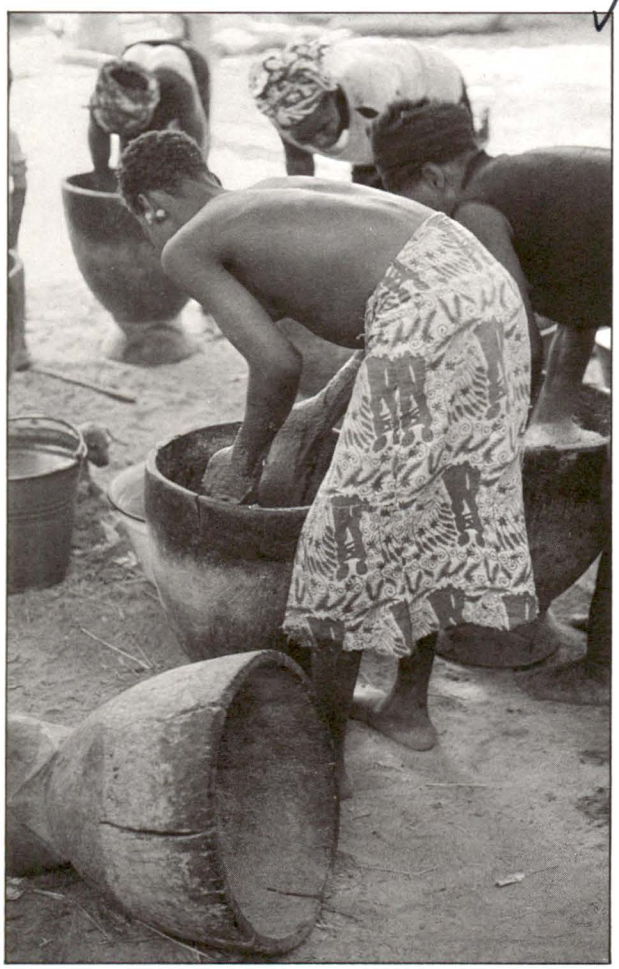
Bananas and their relatives the plantains are important local food as well as major export crops in Latin America, Southeast Asia, and the Caribbean, but little research has been undertaken for the benefit of the small producers. In Panama a Centre grant is supporting research to grow legumes in banana plantations—legumes that have the ability to extract nitrogen from the air and convert it to a form that can be used by plants. A successful banana–legume combination may reduce the amount of supplementary nitrogen fertilizer required

by as much as 50 percent, restrict weeds, and reduce the damage caused to soils by erosion during tropical storms.

In the more arid regions of the world, such as Sahelian Africa, trees themselves can do much to prevent soil erosion and improve the immediate environment, as well as provide fuel, building materials, and fodder. Gum arabic from the acacia tree has a wide variety of uses, from confectionery to cosmetics.

Almost as versatile is the shea-butter tree, also indigenous to much of the Sahelian region. The shea-butter nut produces not only a high-quality cooking fat (it is one of the few naturally occurring oils that is solid at room temperature) but also many pharmaceutical and cosmetic preparations, and is even smeared on the mud walls of houses to prevent erosion. In Mali where the 1977 harvest was a quarter million tonnes of nuts, the division is supporting a project to develop simple mechanical extraction methods such as a screw press that would extract 85 percent of the oil instead of the 35 percent recovered by traditional means. The process would also leave a high-protein residue suitable for cattle feed. In 1977 the extra oil alone would have provided additional revenues of some $30 million to the rural people of one of the poorest countries in the world.

Another product of the African forest is charcoal, which is an important source of fuel in the developing countries. But, in common with other fuels, charcoal is becoming increasingly expensive—a fact which has focused research attention on the inefficiency of most charcoal stoves. In Tanzania the division is supporting a comparative study of numerous African and Asian charcoal burning stoves with the aim of developing a simple, fuel-efficient stove that can be built locally or adapted to available materials in other regions.



Extracting oil from shea-butter nuts is a tedious and inefficient process.

Bamboo serves dozens of different uses in many parts of the world.

Perhaps one of the most versatile of woods is in fact not truly a wood at all: bamboo is used for everything from house construction to handicrafts to a tasty food, and although it may grow as tall and as thick as a tree, it is in fact a grass. In spite of its economic importance to many Asian countries, relatively little research has been done on bamboo, so even the means of propagation are not fully understood. In Bangladesh it is one of the most important forest products and as demand continues to

increase there is a need for large-scale plantations. The Bangladesh Forest Research Institute, with the aid of an IDRC grant, has undertaken a project to develop high-yielding, high-quality bamboo species for both household and industrial uses.

Bamboo is by no means exclusive to Asia, and neither is its close relative rice. In Sierra Leone, for example, rice is grown by 90 percent of the farmers, and in villages it is often stored on bamboo slats high above the cooking fire, where it stays dry and the smoke keeps the insects away. The country is presently making a major effort to become self-sufficient in rice, but much of this effort may be lost unless storage techniques can be improved. The division has supported numerous rice-storage projects in Asia, and is now able to bring that experience to bear on the somewhat different African situation. By studying traditional storage techniques the Sierra Leone Rice Research Station hopes to devise improved storage that will significantly reduce the present high loss rate and be able to accommodate the projected increase in production. The project is linked to a similar study of cowpea storage in Sierra Leone, and the results should be applicable to other African countries in the same climatic zone.

In Malaysia, where fast-growing rice varieties have made two or even three crops a year possible, another kind of storage problem is presented by the rice that must be harvested in the wet season: if it is not cleaned and dried within 24 hours it begins to ferment. What is needed is an inexpensive, simple cleaner–dryer for the small farmer. With IDRC support, the Malaysian Agricultural Research and Development Institute is developing systems using simple equipment such as iron pots heated on a fire of rice straw. The project is part of a network of rice postharvest research supported by IDRC in Asia.

Fast-growing rice varieties developed at the International Rice Research Institute can increase production.

Sun-drying rice: it only works in the dry season.

In Mali the climate is dry and the main cereal crop is millet, but the problem is the same: the inability of smallholder farmers to process the grain quickly and efficiently after harvest causes excessive losses. With IDRC support the Division du machinisme agricole is developing an inexpensive manual thresher in collaboration with a national farm machinery manufacturer. Villagers will be trained to operate it, and local blacksmiths to repair it. A successful prototype may well go into large-scale production in Mali and other millet-growing countries.

Fish is another important source of protein in many developing countries—in Mali for example fish and millet are the staples of the average family's diet—and its preservation presents a different set of problems. The division supports several research projects in fish processing, including one in Mali and another in Indonesia. Both are concerned with the uses of salt and solar energy to preserve fish. As with other "crops," the overall objectives of both projects are to develop economical techniques to reduce losses and improve quality.

But before the fish can be processed it must first be caught—or raised. Aquaculture, the practice of fish farming, has been a major research-support area for the division's fisheries program since 1972. Increasing interest is being shown in cageculture, in which the fish are kept in pens until they are of marketable size. The system has obvious advantages where large bodies of water are available, whether natural, like Africa's Lake Togo, or man-made like Sri Lanka's ancient irrigation reservoirs, both of which are locations for Centre-supported cageculture projects.

Many fish that have never been cultivated show great economic potential. One such fish is an intriguing Latin American species found from Mexico to Peru, and known locally as *chamé*. The fish has a unique ability to survive out of water for several days, thus offering a simple solution to the problem of transporting fresh fish. It also has few bones, tasty white flesh, and

Floating fish cages in the Philippines even have accommodation for fish farmers.

Tiny fish fry will grow quickly under the right conditions.

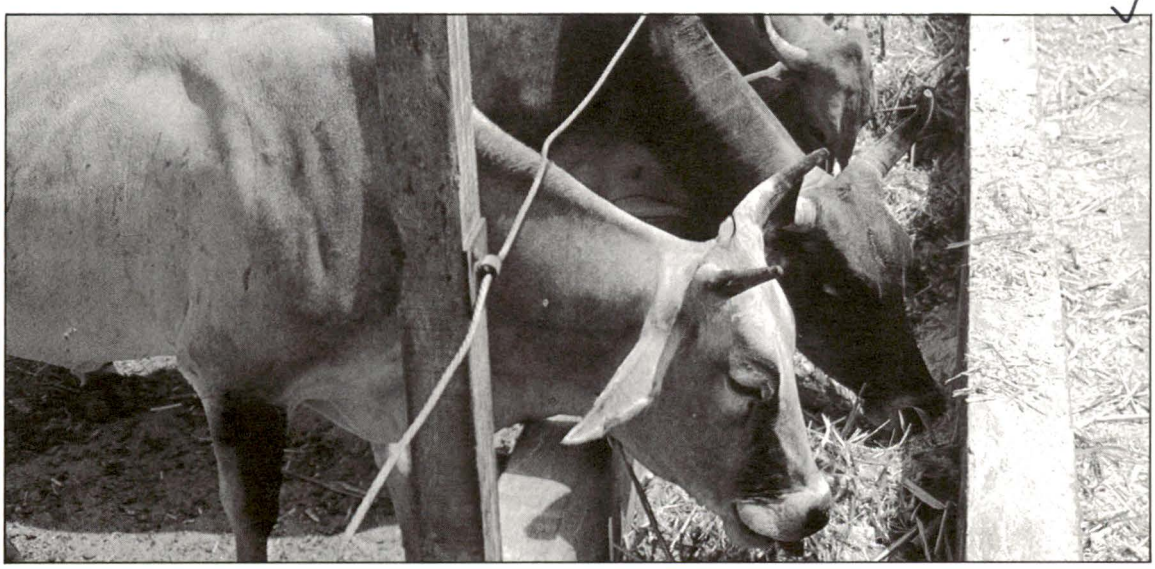
can live in fresh or brackish water. The question is whether it will live, and breed, in captivity, which is what an IDRC-supported project at the Fundacion Ciencia in Ecuador hopes to establish over the next three years.

One of the problems with aquaculture is the ever-present risk of disease or parasites, especially in ponds stocked at high density. The division has in recent years

encouraged greater research into the control of fish diseases, and during the past year provided support for new projects in Malaysia and the Philippines to study problems created by fish parasites in aquaculture systems.

In Latin America, however, livestock is still the main source of animal protein. Scientists in Belize have been studying common pasture legumes from the region in a project designed to obtain increased forage from marginal lands. The legumes, many of which are regarded as weeds, will often grow where no other crop can survive, and the most promising varieties will be extensively tested in the project's second phase. And in Peru a promising new project will experiment with grazing-based animal production in the fertile but fragile ecology of the vast Amazon river basin—a project that could have considerable significance for the six countries through which the basin extends.

A number of projects are also concerned with converting agricultural by-products to animal feeds. One of the most recent to receive an IDRC grant is in Thailand, but could have wide application elsewhere. The aim of the research is to identify certain types of fungi that will act on wood and other by-products, such as sugarcane bagasse and rice straw, in a fermentation process that will increase protein content and improve digestibility. The project forms part of a worldwide network of by-products research supported by the division.

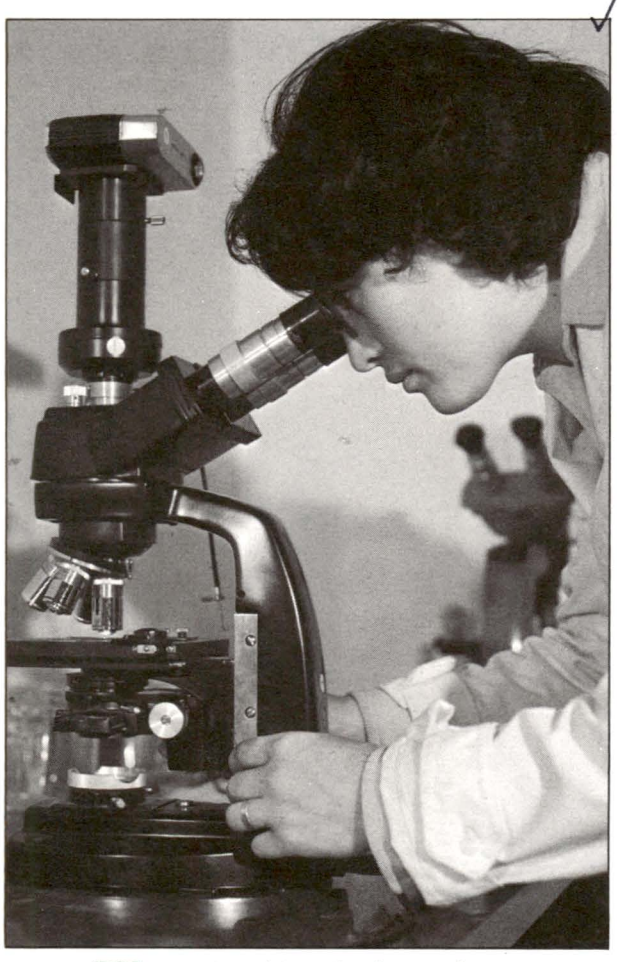


These Mexican cattle thrive on a feed based on the waste from sugarcane plantations.

Health Sciences

Tropical diseases affect tens of millions of people in the developing countries, causing incalculable suffering and severely limiting the capacity of the people to improve their lot. Six major tropical diseases are now the subject of a concerted international research effort coordinated by the World Health Organization of the United Nations. IDRC was one of the original supporters of the WHO's Special Programme, but it is also concerned with diseases that are not presently part of that effort.

One of these is dengue hemorrhagic fever, a virus that kills from 4 to 40 percent of its victims, and is now widespread in Southeast Asia. In Indonesia, for example, the number of reported cases has been increasing for several years to the point where the disease is now considered endemic. IDRC supported a regional seminar on the disease in 1977, and a year later provided a grant for a project to study the disease in Indonesia. Complementing that work, a further project was approved this year to study the disease in the area of Ujung Pandang, one of the few urban centres in Indonesia still reportedly free of the hemorrhagic form of dengue fever. If researchers can find an explanation for Ujung Pandang's apparent immunity, they will add considerably to understanding the nature of the disease and possible measures to control it.



IDRC supports an international research program to eradicate the major killer diseases of the tropics.

Yellow fever, like dengue fever, is caused by an arbovirus. Animals of the forest act as reservoirs for such viruses, which are transmitted by insects and have been isolated not just in the tropics but in almost every area of the world other than the polar regions. At the Caribbean Epidemiology Centre in Trinidad, IDRC is supporting a project to develop simple diagnostic tools for arboviruses in general, and, in particular, to study specific methods of transmission of yellow fever by mosquitoes, and how the yellow fever arbovirus survives in the forest between epidemics.

Tuberculosis is still a major public health problem in several African countries, including Kenya. To evaluate and improve the national tuberculosis control program, the Kenya Tuberculosis Investigation Centre is carrying out a prevalence survey with the aid of an IDRC grant because no accurate statistics are available on the current tuberculosis situation in the country. Data from this two-year project will serve as a basis for future planning of tuberculosis control in Kenya.

Trypanosomiasis, better known as sleeping sickness, is a threat to some 35 million people in Africa, and a major impediment to the development of beef and dairy cattle production. As an adjunct to the WHO Special Programme, which focuses on the epidemiology and pathology of sleeping sickness, IDRC is supporting a project in Kenya aimed at biological control of the carrier of the disease—the tsetse fly. Under

Inoculating cattle in Kenya: the tsetse fly is a major threat to both humans and animals in Africa.

controlled conditions, researchers will study the biology of the velvet ant and the bee fly—two of the tsetse's natural enemies—with a view to developing mass-breeding techniques of the predators as a means of tsetse control.

Many diseases could be prevented through the provision of a clean water supply and adequate toilet facilities. The division continues to support several projects under its rural water supply and sanitation program, a number of which have now moved into a second phase of research. In Botswana, in one of a network of low-cost sanitation projects for Africa, researchers built and tested numerous simple toilets for testing in squatter communities around large urban areas. Three designs have proved technically satisfactory, but so far have not generally been well accepted in the communities. Acceptance is crucial, as the government plans to install 20 000 low-cost sanitation units in the 1980s. So in a second phase, a user survey will be conducted and further modifications and improvements made to the selected toilets. A public education program will be based on the results of the survey and economic studies will also be carried out.

In Panama, engineers have been studying simple water filtration systems that can be used to bring cleaner river water to the villages and have produced a design and construction manual for the use of sand filtration galleries. Based on these studies, improved infiltration galleries will be constructed at four sites with different conditions and their effectiveness in providing clean water will be evaluated over several months. By putting theory into practice, the researchers will be able to revise their manual and put it into final form for widespread distribution.

A clean water supply in the village helps prevent disease.

Testing simple toilets to improve hygiene in Botswana settlements.

Well-nourished Colombian children can better resist diseases.

Nutrition is also important to health in more ways than one. In Colombia, the division is supporting two projects concerned with different aspects of nutrition and health. One deals with the relationship between malnutrition and internal parasites such as roundworms. The other is investigating recent findings suggesting that even a moderate degree of malnutrition negates the effects of vaccinations against common childhood diseases such as measles, diphtheria, and polio. Both projects will add considerably to the body of

knowledge on the problems of malnutrition and how best to overcome them.

Breast feeding is vital to the nutrition and general health of babies in most developing countries, but the relationships between lactation and fertility, and the possible dangers of using hormonal contraceptives while breast feeding, are still controversial. Through its program for research into fertility regulation methods, the division is supporting a number of projects around the world that are investigating different aspects of the fertility–lactation problem. In Egypt and Mexico, studies are under way to assess the effects of breast-feeding duration and type on postpartum amenorrhea (absence of menstruation following birth). In Chile, a study is being made of the effects of new contraceptive implants in lactating women, while in Indonesia researchers are examining the effects of oral contraceptive use during lactation.

Studies of Mexican mothers may lead to more effective birth control methods.

Safeguarding the health of industrial workers is an important new field.

The fertility regulation program is also concerned with the development of new, safer contraceptives such as the subdermal hormonal implants mentioned above, which are also being evaluated in terms of effectiveness and acceptance in an IDRC-supported project in Ecuador. Another new development with which IDRC continues to be closely involved is the development of a contraceptive vaccine. The potential of such a vaccine was first demonstrated in the 1970s at the All India Institute of Medical Sciences (AIIMS). Since 1975, IDRC has been supporting a joint program with the AIIMS team and the International Committee for Contraceptive Research to develop the vaccine for widespread use.

The first phase of the project demonstrated that it is possible to immunize a person against a specific hormone in the body and counteract its action in maintaining a pregnancy. The immunity provided varied considerably, however, and in the second phase researchers will attempt to overcome this problem by developing a vaccine that is safe, reversible, and will ensure protection against pregnancy.

A new field of research for the division, one that will likely see increasing activity in the future, was opened up with the approval in 1980 of a grant for a project to study industrial health in Thailand. In common with a number of other developing countries, Thailand is becoming increasingly industrialized, and as the shift from agriculture to industry continues, attention will need to be given to improving conditions to safeguard the health of the workers. The first project will investigate conditions in Samutprakarn Province, which has 1000 factories employing 64 000 workers, and develop a model for improving conditions that could be applied elsewhere in Thailand and in the region generally.

Information Sciences

If researchers and decision-makers are to work effectively and not to waste time repeating work (and mistakes), they need to be supplied with the information that represents a consolidation of what is already known.

But, in building such a service, no country can be self-sufficient. Even a superpower has difficulty acquiring and processing the information that it needs from foreign sources; a developing country cannot hope, of its own efforts, to construct an adequate information service for its researchers and decision-makers. The solution lies in cooperative information systems. These require each country to identify and process the information produced in its own territory, and provide mechanisms by which this information is merged into a single index so that each participant obtains the information from the rest of the world.

Since its inception, the Information Sciences Division has strongly supported the establishment of such systems—efforts that are now yielding fruit and bringing about an increasing rationalization of investments. In particular the information system for agricultural science, AGRIS, which is managed by FAO, now has the participation of almost 100 countries, and is reporting more than half of all new agricultural information produced. IDRC has helped particular regions (Latin America and Southeast Asia) to

The AGRIS input centre in Vienna: a global information network.

Above and left: the specialized agricultural information centres provide an invaluable resource to scientists and researchers throughout the world.

establish regional resource bases through which individual countries can participate in AGRIS and from which they can obtain outputs tailored to their needs. With the success of these regional resource centres IDRC is now carrying some of its investment down to the national level and, in the course of the last year, five grants were awarded to individual countries to consolidate their participation in AGRIS.

A similar cooperative information system, DEVSIS, has been proposed to serve the needs of policymakers, ministries of planning, and development banks. IDRC participated in its design and has helped the UN Economic Commission for Latin America carry out pilot experiments on a regional basis. A new program, DEVSIS Africa, will be managed by the UN Economic Commission for Africa in Addis Ababa, and is being financed jointly by the UN, the UNDP, and IDRC.

Large cooperative information systems provide essentially an inventory of information available in a particular economic sector. The end-user, however, often needs an interpretive information service delivering information in the right language and at an appropriate level of understanding. Hence IDRC has also supported the establishment of specialized information analysis centres on particular topics of high priority for development. For example, since 1975, IDRC has supported the International Grain Legume Information Centre based at a research institute at Ibadan, Nigeria. This

Assisting individual countries to develop the resources to participate in cooperative information programs is a major program component.

centre is now well established, and is expected to become part of the core program of the host institute.

At the regional level the Centre supports projects such as the development of a network of institutions cooperating in a pan-American sanitary engineering information system, based at Lima, Peru, and the establishment of a new Latin American human settlements information network, to be based at Bogota, Colombia.

The highly-acclaimed magazine *Famille et Développement*, first published with IDRC support in January 1975, is now the responsibility of a new organization, l'Association africaine d'éducation pour le développement, which will continue its publication with support from a consortium of donors. Also, an extremely successful network of institutions engaged in industrial extension work—TECHNONET Asia, covering nine countries of Southeast Asia—became incorporated under the laws of the Republic of Singapore. The program thus ceases to be one administered directly by IDRC, but a grant will give partial assistance to the operations of the new institution over the next three years. During this time it is expected that TECHNONET Asia will, among its various other programs, ensure the training of another 500 extension officers to serve the needs of small- and medium-sized industries in the region.

TECHNONET Asia trains industrial extension officers to help make small industries more efficient.

In Ottawa, the division continues to maintain MINISIS, a set of computer programs that have proved extremely useful for the management of libraries, as well as the recording and retrieval of bibliographic information and other types of data. Three private companies have signed agency agreements to market MINISIS commercially in Western Europe and North America, but IDRC continues to provide MINISIS free-of-charge in developing countries. The national documentation centre (CND) in Rabat, Morocco, for example, already has a machine-readable file of 100 000 Moroccan documents and, with its MINISIS installation, will be putting on-line terminals for information retrieval in several government departments as well as in the principal provincial planning agencies.

The IDRC library continues to provide service to Centre staff as well as the Canadian community concerned with Third-World development. IDRC's own computer can provide information retrieval services to any Canadian institution that connects to it by telephone. The data bases available for searching are those created within IDRC (the library, the Canadian DEVSIS experiment, and SALUS—information on health care services in rural areas of developing countries), as well as those obtained by agreement from four of the UN agencies particularly concerned with development work.

Social Sciences

One of the major concerns of the division's economics unit is the question of food production. Thus the division continues its support for the International Food Policy Research Institute at one level, while also supporting a number of economic studies in the agricultural sector that deal with some of the basic issues confronting farmers in the developing countries.

In Sierra Leone, for example, IDRC is supporting a study of the economics of cassava, the second most widely grown food crop in the country after rice, with a view to finding out what are the relative advantages to the farmer and to the country of cassava production over rice. In Nigeria there is support for a research project to study the relative efficiency of both large and small farms, and to develop an agricultural strategy that will lessen the country's present dependence on food imports.

Economic studies of the agricultural sector can help develop more effective marketing policies.

Efforts to increase food production can often be undercut by inappropriate marketing policies, however, as farmers will quickly reduce production in response to low prices. In Ivory Coast the division is funding a study of agricultural marketing at its primary level—between farmer and initial purchaser—to gain a better understanding of the workings of primary markets. Data from the study will be made available to policymakers in other countries of the Sahelian zone.

Production and marketing are only two of the factors to be analyzed in a wide-ranging project in Thailand that will study the social, cultural, and economic constraints to development. Researchers will examine the successes and failures of development efforts in Ayutthaya province over the past decade and try to isolate the factors that determined what went wrong, and what went right. The resulting report should have application well beyond one small area of Thailand as a contribution to understanding the impact of development programs.

Population is another important factor in the development equation. The negative effects of high growth rates are well documented, but only relatively recently have governments and agencies come to recognize that family planning programs alone are not sufficient to reduce fertility to manageable levels. The division is supporting a two-year study of integrated programs in three countries—Indonesia, Korea, and Thailand—where family planning services are made available as part of a wider development strategy. By comparing the different approaches, the investigators will be able to evaluate, for the first time, the effectiveness of integrated population programs and provide policy recommendations to government planners.

The study of the movement of populations is also important in development planning. In Upper Volta the division has been supporting a detailed survey of population migration between rural areas, from rural to urban areas, and to neighbouring countries. The project has also helped to develop a research capacity in the country, and this will be strengthened in a second phase that will analyze the relationships between migration patterns and local socioeconomic conditions. In Paraguay the division is supporting a study of the effects of heavy in-migration resulting from the construction of the Itaipu Dam. As in Upper Volta, the project will increase the research capacity of the country in a field in which it is presently weak, as well as obtain valuable data for regional development in the area to be affected by new hydroelectric projects.

Infant mortality is one particularly sensitive indicator of socioeconomic conditions in any community, and one that can shed light on the impact of various forms of social services. Over a 25-year period to 1971 the infant mortality rate in Sri Lanka dropped from 141 per thousand to only 43. However in the late Seventies there were signs of a slight upward trend to 47 per thousand. The Centre is supporting a project to study the factors affecting infant mortality in the island over the past 20 years, and to make the results available to assist government policymakers in planning investments in socioeconomic development and public health programs.

Analysis of population migration in Upper Volta provides data for the development planners.

Probably the most costly of social services in most developing countries is education, especially in countries that are attempting to expand their school systems rapidly to make education universally available. Egypt, for example, some time ago set 1981 as the target date for universal primary education. As part of the ambitious program the government introduced the "one-classroom school" as an economical nontraditional approach to providing a flexible education service to remote rural areas—there are now more than 3500 of these schools. With the support of an IDRC

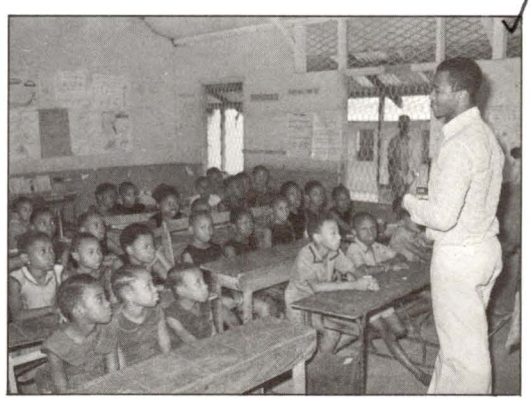
grant the Egyptian National Council for Educational Research is evaluating a sample of the schools to assess their effectiveness and prepare policy recommendations for the next phase of the country's educational expansion.

Colombia is another country making a major effort to increase both the quantity and the quality of education available to its people—to the point where education now accounts for 20 percent of the national budget. The division's education unit is supporting several related projects in Colombia. One is to study the cost-effectiveness and efficiency of rural primary schools to assist in the future allocation of resources. A second is concerned with the factors, both in-school and out-of-school, that affect the acquisition of literacy and the habit of reading. And a third is evaluating the level of achievement in primary schools and developing the necessary testing instruments for future evaluations as the country attempts to improve the standard of education and eliminate regional disparities.

Similar projects concerned with primary school achievement are being funded in Nigeria and Thailand, while in India researchers are tackling the question of achievement from the viewpoint of the child with "learning disabilities."

Another aspect of education requiring investigation is the effectiveness of the teachers themselves. In Sierra Leone a project arising out of an IDRC-supported seminar is pioneering a new methodology to establish a profile of "the effective teacher." The teacher evaluation will be based on criteria developed in the country, and the resulting profile compared to those used in industrialized countries. Thus the researchers hope their findings will be of direct use to teachers' colleges, both in the preparation and evaluation of future teachers.

Egypt's one-classroom schools: providing the most education at the least cost?



In Sierra Leone the effectiveness of traditional teaching methods is being evaluated.

In the drive for development many countries face difficult choices in the areas of resource exploitation and industrial strategy. This dilemma is well illustrated in the case of the proposed copper mine at Namosi on the main Fijian island of Suva. As the single largest development in the region, the mine will produce profound changes in all aspects of Fijian life. The

division's science and technology policy unit is supporting a research study to fully evaluate all the technology policy options for the exploitation of the island's copper, and to describe for the government the positive and the negative effects of the venture, both during construction, and under continuous operation.

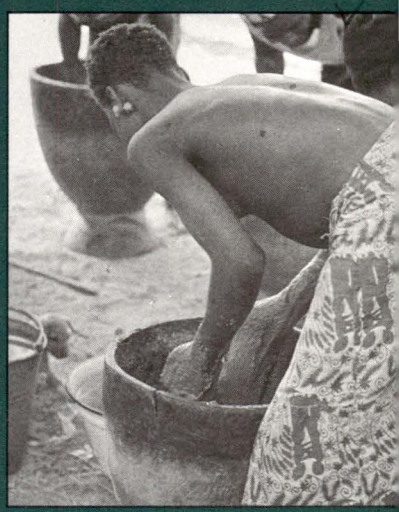
Brazil, "the giant of Latin America," also faces difficult choices in its efforts to expand the economy. Choices for instance between large- and small-scale production, between efficiency and employment, between traditional and modern technologies. Two new IDRC-supported projects are aimed at providing the data needed to help the government arrive at the right decisions for this stage of its development. One is a study of the role of small- and medium-sized businesses and their contribution to the growth of employment, and the other will examine the effects of radical technical change on workers in the textile industry. And in neighbouring Argentina, which also has a rapidly growing industrial economy, the division is supporting a study of the role of state purchasing power in developing the nation's technological capacity. The project will concentrate on the electronics industry, but will also develop a methodology that can be used in other similar case studies.

The study of technology policy in the developing countries has been relatively neglected in the past, due at least in part to a shortage of qualified researchers. Since 1976, the division has supported a successful program of training in technology policy studies through the Science Policy Research Unit of the University of Sussex, England. Building on this experience, and using much of the material developed in the initial program, the division will now support a series of training workshops for science policy researchers in Africa, Asia, and the Middle East. The Ottawa-based program is expected to train approximately 60 researchers and policymakers over a two-year period.

There is no such thing as a "typical" project in the files of IDRC. More than 900 were approved during the Centre's first decade, and some 350 have now been closed, although for most of those the end of the research means only the beginning of the next stage—implementation. To cull from those files just four, one for each program division, to represent the past ten years, was not an easy matter.

Nor is there any such thing as a completely successful project, or a complete failure. For even if a project failed to meet any of its initial objectives it would still have provided a valuable learning experience, and demonstrated to future researchers that this is not a promising avenue for investigation. More often than not, however, a project meets most of its objectives, and is concluded on a more positive note. And in that sense these projects are typical: all had positive outcomes, all had problems to overcome, and their impact can be seen in activities going on today.

Beyond that, they were selected for the purely subjective reason that they make good "stories." For that is what the following pages are, not scientific evaluations (those have already been written), but a reporter's view of how and why the projects came into being, where they succeeded, where they failed, and what happened when the research was completed.



Our Magazine

An African village is rarely quiet. During the day small children are at noisy play. Women chant in time to the hollow pounding of the grain for the evening meal. A group of old men argue in the shade of a tree. Dogs, birds, and roosters add their shrill notes to the cacophony of sound.

Beneath another tree a young man raises his voice to be heard above the din as he reads aloud from a tattered copy of *Paris Match* that is at least a year old. His attentive listeners hang on every word; yet most of these Senegalese villagers have never traveled further than the nearest market town, and have no concept of where or what Paris is.

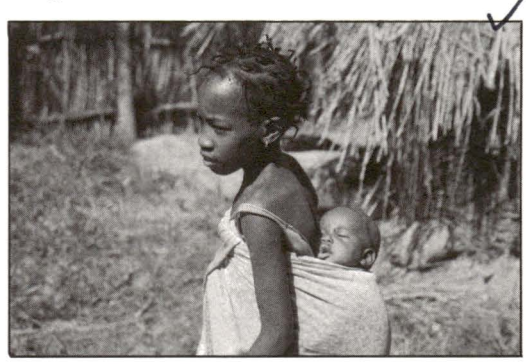
Village meeting in Senegal: plenty of talk, but not much to read.

Although literacy levels throughout most of Africa are among the lowest in the world—and the French-speaking Sahel region is no exception—the number of literate adults has doubled in the past two decades. But for those who can read there is precious little relevant material to be had, especially in the countryside.

In the cities there are locally published newspapers, and some library facilities. A few magazines are displayed on newsstands, but most of these are imported from other continents, deal with other cultures, and are very expensive. On street corners in most towns and cities there is a brisk trade in used magazines. Some are sold time and time again. Eventually a few may reach the villages ... like a year-old copy of *Paris Match*.

Coupled with this problem of lack of local media, is the need to get more information out to the people, particularly messages about family health, contraception, hygiene, nutrition, and other development-related topics. This region of Africa has one of the highest birthrates in the world, at 47 per thousand almost double the global average. It also has a tragically high infant mortality rate of more than 150 per thousand births. Disease and malnutrition are endemic, and the average lifespan is just 48 years, compared with 72 for the average North American.

A large part of the problem is simply ignorance: lack of knowledge. As recently as 1975, for example, Mali was the only country in French-speaking Africa with an officially sponsored program of family planning and child care information.



The region has a tragically high infant mortality rate — double the global average.

Put these two problems together and what you have is a ready-made market for a popular regional publication providing information on family health and development. That at least was the proposition put forward by the participants from 11 countries who attended the region's first seminar on sex education in Mali in 1973. The idea was more clearly defined at a meeting sponsored by IDRC's Information Sciences Division later the same year, and soon took shape as a project proposal.

Once the project was approved by the Centre's governors, an international editorial board was formed, temporary space was made available in IDRC's regional office in Dakar, and the two people who would see the publication through its first crucial years (a Swiss sociologist and a Senegalese journalist) toured the region seeking ideas and support. And within a

year the first issue of *Famille et Développement* was on the press.

From the beginning the magazine's success surprised even its most optimistic backers. With every issue the print run was increased—and every issue was sold out. (In fact the first few issues were distributed free, but once a price was attached the demand slowed hardly at all.) Although the price was deliberately kept low in view of the magazine's orientation to development education, second-hand copies usually sold at a premium.

On press days the scene at IDRC's Dakar office was chaotic, with the tiny staff of five scrambling to label and distribute the bundles of magazines as fast as the printer could deliver them. Distribution bottlenecks, lack of sales networks, and losses in the mail presented considerable problems in the early days. Sometimes as many as three-quarters of the copies mailed in Senegal were "intercepted" before they could reach the subscribers. Many subscribers simply gave up and bought from newsstands instead. But in Chad, a country twice the size of France, there were only three bookstores selling international magazines. As an ingenious solution to that problem it was proposed to market *Famille et Développement* through government beer stores!

Like any publishing enterprise the magazine also had its share of "gremlins"—illustrations that somehow appeared upside down or in the wrong place, paragraphs that unaccountably disappeared from articles en route from editor to printer. But the overall standard was remarkably high, the editorial style was outspoken, and the layout and design rivaled anything to be found on the newsstands.

In spite of early teething troubles the magazine quadrupled its circulation to 20 000 in its first three years, and attracted favourable reviews from such diverse sources as the Toronto *Globe and Mail* and the *Christian Science Monitor*. Its readers were unanimous in their praise. Many were teachers, who used material from the magazine in their classrooms—in Togo the magazine is in fact sold by the Ministry of Education. Others were public servants who were able to use the information the magazine gave them in day-to-day contacts with the public.

In short they were the "opinion makers" the magazine was intended to reach, and as such they increased its audience many times over. A readership survey carried out in Senegal indicated that there was an average of 10 readers for every copy.

Senegalese journalist Marie-Angélique Savané was first editor of the new magazine.

Almost as surprising as the magazine's instant popularity was its fearless approach to such highly sensitive issues (politically and culturally) as women's rights, prostitution, and abortion. There had been pessimists at the outset who predicted that an editorial board composed of representatives of eight countries would be unable to agree on controversial issues. In fact the editorial board proved to be one of the strengths of *Famille et Développement*, and there were very few complaints about "objectionable" material.

But in spite of its obvious success, the magazine was a financial failure. Because of its non-commercial nature it attracts very

little advertising, and revenue from sales does not come close to covering costs. After three years the research aspect of the project could be said to be completed—the original hypothesis conclusively proven. But rather than abandon its "baby" at this point, the Centre agreed to a further period of diminishing financial support, during which the "Africanization" of the project would also be completed.

That goal was accomplished by the establishment of ASAFED, a non-profit organization based in Dakar and supported by most of the African nations involved in the project since the beginning. Other contributions now include the development assistance agencies of Canada, Sweden, Switzerland, and the United States, the Ford and Rockefeller Foundations, and the United Nations Fund for Population Activities. The IDRC's financial commitment is now minimal.

As for *Famille et Développement*, it is now housed in new offices, still in Dakar. It has new editors and a slightly larger staff. Its approach to the issues of development is as fearless as ever. Circulation is now near the 30 000 mark, making it one of the most successful magazines produced in Africa by Africans. And its readers still call it "our magazine."

Homes away from Home

Although the main thrust of the Centre's research support has been, and continues to be directed at improving the living standards of the rural poor, the needs of the urban poor cannot be ignored. In fact the two problems are inextricably interrelated, because huge numbers of the squatters and slum dwellers in the Third World's cities are migrants from the countryside.

The populations of the major cities of the Third World are growing at a much faster rate than the country as a whole. Rural–urban migration is one of the principal causes, and it is bringing about a rapid shift in the balance of population.

City dwellers numbered about one-in-five of the population of the developing countries in 1970. By 1980 they numbered about one-in-four. It has been conservatively estimated that the figure will be one-in-three by the end of the century. More pessimistic projections call for fully half the Third World's population to be living in cities by the year 2000.

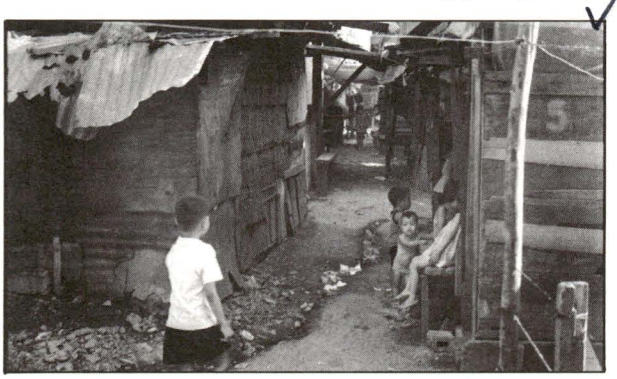
Rural-urban migration is causing a rapid shift in the balance of population.

Such projections have to be called pessimistic because of what they are likely to mean in human terms. Cities like Bombay, Calcutta, Manila, Cairo, Peking, and Jakarta could have populations approaching 20 million by then. They are already being called the super cities of the future. But if present trends continue the only thing super about these and other Third World cities 20 years from now will be their size.

Most of these cities are already overcrowded and struggling to provide even

basic facilities for their burgeoning populations. In 1973 the UN reported that a large proportion of the urban population of the least-developed countries was living in housing at densities and in conditions that present a serious hazard to health and safety. The most immediate problem that presents itself on contemplating the next two decades is: where and how will the cities house all those extra millions?

The causes and possible cures for rural–urban migration have long been the subject of extensive study throughout the Third World, but in the early Seventies the Centre's Social Sciences Division was quick to recognize the need for another kind of study. Very few countries, or cities, had any kind of coherent urban housing policy, or had undertaken studies of the kind of low-cost housing options available to them. The problems are particularly acute in the densely populated countries of Southeast Asia, and it was here in 1972 that an ambitious eight-country low-cost housing study project was begun.



Overcrowded cities in Southeast Asia present a major problem for the authorities — and the people.

Singapore's highrise housing program has attracted visitors from many Asian cities.

The project grew out of a conversation between one of the Centre's program staff and the research director for the Singapore Housing Development Board about the successes and failures of Singapore's housing programs. Because it is a relatively wealthy city-state with a very high population density, Singapore recognized the need for housing policies and programs earlier than most, and was able to act.

Over the years Singapore gained a great deal of valuable experience, and began to attract attention. Faced with an increasing number of visitors from other cities, all wanting to know what had been done, how it had been done, what worked, and what didn't, the research director wondered aloud if some better way could be found to share Singapore's experience.

The project that developed as a result of the conversation differed somewhat from the original concept. It became an eight-country cooperative study, with the emphasis on a mutual sharing of experience, comparability, and common themes. In addition to Singapore and Asia's other city-state, Hong Kong, the countries that took part were Indonesia, Laos, Malaysia, Philippines, Sri Lanka, and Thailand. The primary target of the project was the preparation of a series of national studies of housing conditions and needs.

It is perhaps indicative of the Centre's early stage of development, that when the participants were first brought together to discuss the design of the low-cost housing project, they found themselves ensconced in the plush surroundings of the elegant Singapore Hilton. And it is perhaps indicative of the nature of that group—not a Western expert among them—that the majority of them ended the day's discussions over bowls of noodles and some satay bought from street vendors in the hotel car park!

As it turned out the participating countries faced many common problems in spite of considerable physical and cultural differences. Cities such as Jakarta, Manila, and Kuala Lumpur, for instance, actually have greater population densities than ei-

ther Singapore or Hong Kong. Yet only the two city-states at that time had definite housing policies and programs, with specific agencies to implement them. The others had only relatively recently begun to appreciate the seriousness of the problem and taken steps to do something about it.

The studies, meetings, conferences, and exchange visits lasted almost three years. Usually with social science projects it is difficult to produce "concrete" results. One cannot point to increased crop yields or count numbers of health workers trained. But this project was something of an exception. First there were the national reports—only paper, to be sure, but in almost every case the first report of its kind in each country. So important were they considered that some are now being used as standard textbooks for training city planners.

In some of the participating countries new institutions were created as a direct result of the study team's recommendations, such as Thailand's National Housing Authority or Indonesia's Urban Development Corporation. Singapore helped in setting up both agencies and also assisted the Philippines in drawing up a national housing policy and plans for urban renewal in Manila. Thailand was able to assist Laos in the preparation of its reports and recommendations.

But it is perhaps in the less tangible areas that the project will eventually have its greatest impact. This was the first project of its kind to bring together researchers and policymakers interested in housing in the Asian region. It pioneered the "network" approach that has been widely used by the Centre since. And it demonstrated beyond question the value of bringing together developing country researchers to collaborate on the basis of mutual experience.

The Medex Solution

The little blue launch noses its way steadily upstream, cleaving the muddy brown waters of the broad river. Dense bush on either bank gives way to cleared farmland, and here and there houses appear near the water's edge, built high up on stilts to keep them above the flood level. This is one of many isolated villages scattered through the interior of Guyana. The river is virtually the only way in or out. It is the village people's lifeline.

Two women in a well-laden canoe call a greeting as the blue launch pulls in to the riverbank and a young man scrambles ashore clutching a large bag. He hurries to one of the houses, where he is quickly

Medex on the job: making housecalls by launch in the Guyanese interior.

ushered inside by an anxious mother. The sick child is lying on a bed in the one main room. A swift examination reveals a slight fever, a minor infection, easily treated. The child also has parasites, he knows, and he stresses the importance of hygiene once again as he explains to the mother the treatment for the child's ailment.

Then back to the launch to head downriver to the clinic. Another routine house call for the bush doctor? Not quite. This young practitioner is not a doctor, he is what is known in health services jargon as a "physician extender." To the people on the river he is known more succinctly as "the medex."

Guyana is a former British colony, a little English-speaking enclave on the South American continent. Sometime in the future Guyana's 215 000 square kilometres, much

of which is virtually uninhabited, may yield some of the rich resources enjoyed by neighbours such as Venezuela and Brazil. But in the meantime this is not a rich country, and for the rural people of the hinterland life is generally a matter of subsistence.

Guyana has no facilities for training doctors, and as a result there are less than 100 physicians in the country, perhaps one-third of them expatriates working on contract. Ten years ago there were maybe 170 doctors, but many leave for better pay and working conditions in the United States or Britain. Like so many other developing countries, Guyana is also a victim of the brain drain.

In the long run the solution is to improve conditions at home so that the doctors may be less tempted to leave. And at the same time the government needs to find a way to bring better basic health services to the people of the hinterland.

In a country with less than 100 doctors, the medex is appreciated by the rural people.

The medex approach was adopted by the University of Hawaii as a strategy for delivering health services to small populations in isolated areas such as the Micronesian Islands. The key to the system is the establishment of a corps of specially trained middle-level health workers who can provide not only preventive and curative service, but are also health promoters and managers. One of the basic shortcomings of many rural health care delivery systems has been the absence of such an intermediate level to bridge the gap between the community health worker (who can be trained and supervised by the medex) and the formal health system.

Guyana's Ministry of Health was impressed with the medex approach and determined to try to adapt it to their situation. They sought help from IDRC and the Health Manpower Development Staff of the University of Hawaii to implement their plan. IDRC's first involvement was to provide study grants for seven Guyanese health professionals to take intensive courses in training methodology. The government meanwhile took steps to prepare for the new system, even drafting legislation to provide a legal framework within which the medex would operate.

The plan was for an integrated project. Arrangements were made with the University of Guyana for formal recognition of the medex training, and a cadre of village health workers was to be trained using the same modular learning approach as for the medexes themselves. Nothing less than a reorganization and strengthening of the country's health infrastructure was called for.

With the training of the core group complete, the Ministry decided to undertake a three-year demonstration program. IDRC and the University of Hawaii agreed to provide support. The program began auspiciously, with new quarters in a refurbished government office building ready in good time to begin training the first group of would-be medexes. There were 16 in that first group, and by the end of the project a total of 61 men and women had been trained.

But the developments that were supposed to accompany the training and placement of medex personnel did not move at the same pace. As a consequence placements had to be limited to areas where there was already adequate support. Nevertheless 45 medexes were placed in hinterland rural posts, and 11 in needy areas around the capital, Georgetown. The remaining five, having gained some field experience, were brought back to headquarters to serve as tutors and supervisors.

Supervision proved to be another difficulty in the demonstration project, largely because of a shortage of government medi-

cal officers—in one instance a single medical officer was expected to cover a territory of some 75 000 square kilometres. So the project staff themselves provided most of the supervision. To keep all the medexes in touch they produced a bi-weekly newsletter, and for those in the most isolated postings a weekly radio hook-up provided the opportunity for discussion, advice, and encouragement.

Time and again the project staff were obliged to improvise as the integration of the medex into the existing health system was delayed by a complete review of the country's health services begun in cooperation with the Inter-American Development Bank after the project had started. The training of village health workers was also delayed. But in spite of difficulties and its shortcomings, the medex program showed that it could work.

The medexes have come to be accepted, and for the most part respected, both by the public and by other health professionals in the country.

The experience will prove invaluable in the next stage—the large-scale expansion of the program with the assistance of a multi-million dollar grant from USAID. But, as an independent evaluation of the three-year experiment pointed out, if the program is to bring about improvements in the health of the Guyanese people, there must be even greater emphasis on measures designed to improve health, rather than on the treatment of the sick.

For the medexes themselves the dilemma is a painful one, for there is a great need for conventional health care. Health promotion is time-consuming, and there are only 24 hours in a day.

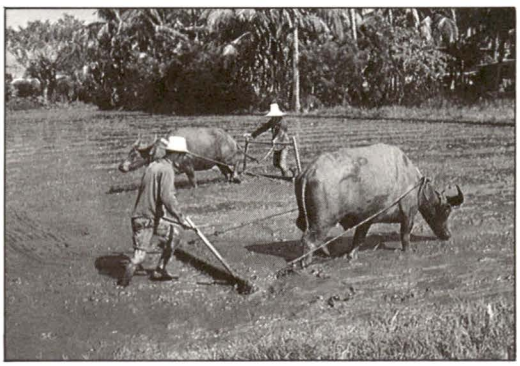
On a ferry crossing the Essequibo River to one of the islands served by the medex, a woman sums up the success and the shortcomings of the project in a single sentence: "I tell medex not to work so hard, for if he gets sick who is going to take care of us?"

Rice Plus

It is the dry season in the Philippines. The rice fields around the village are dry and almost deserted. Except for one small area where a half-dozen farmers have got together to try something new—their fields are green again.

What the farmers have done is dig a few shallow irrigation wells—there is still water not far below the surface—and plant cucumbers. Their neighbours watch and wait, and see the six enterprising farmers carry off bushels of cucumbers to market, where they sell for hard cash.

Next year at dry season, 56 farmers are at work in their fields, growing not only cucumbers but watermelons, mung beans,



Rice farming in the Philippines: many farmers still grow only one crop each year on small farms.

and a few other crops. The weather is good, and so is the harvest. Everybody makes a little money, bank loans can be repaid, and a lesson has been learned: the fields need not lie idle in the dry season.

That incident took place in the early Seventies, and it has been repeated time and again throughout the Philippines and a dozen other countries in Asia ever since. What the farmers are doing is adopting a system called multiple cropping. The practice itself is not new, since ancient times farmers in the tropics have used forms of multiple cropping, usually to meet the needs of subsistence farming.

What is new is the scientific study of some of these traditional techniques, and the development of cropping systems that have been known to produce as many as nine vegetable crops from the same piece

of land in a year. The potential for intensifying small-farm production in the densely populated regions of Asia is enormous.

This potential was recognized by researchers at the International Rice Research Institute (IRRI), in the Philippines, at about the time IDRC was being formed. IRRI is one of a number of specialized agricultural research centres around the world supported by an international group of donors. New, high-yielding rice varieties developed there had revolutionized rice farming, but still many farmers would grow only a single crop of rainfed rice. In a region where the average farm is about two hectares, and the labour force is increasing at about two percent a year, labour-intensive multiple-cropping systems

Researchers must find the best combinations of crops to improve both diet and income.

seemed to offer many benefits.

So IRRI decided to broaden its scope to explore the total food production capability of the tropical rice farmer. In a proposal setting out the rationale for the new program the Institute's director and associate director wrote: "Perhaps mankind's greatest challenge during the next two or three decades is to ascertain and more nearly achieve the crop production potential of the tropics."

IDRC's part in helping to meet this challenge began in late 1971 as one of the earliest projects of the Agriculture, Food and Nutrition Sciences (AFNS) Division. The Centre had been approached by both IRRI and the University of the Philippines College of Agriculture (UPCA) to support closely related research proposals dealing with research, training, and adoption of multiple-cropping systems.

At IDRC's suggestion the two proposals were combined into a single project for an initial two-year period. The Centre eventually supported the research program through several successive phases until 1978. Out of this research grew a network of cropping systems projects in a dozen Asian countries, some of which the Centre is still supporting today, all based on the IRRI/UPCA experience. Cropping systems research has become one of the largest components in the AFNS Division's program.

As the original project proposal stated, a great deal of well-planned research needed to be done to achieve the "maximum potential" the researchers were seeking. Why, for instance, do certain crop combinations have the effect of reducing insect infestations? These biological control mechanisms needed study. Why do some crops grow well together, or in sequence, and others not? Both types of interactions must be studied before new cropping systems can be recommended to the farmers. And what of nutrition? What are the best combinations of crops to improve the people's diet as well as their incomes? And there were the socioeconomic considerations, the need for improved supplies of fertilizer and seed, the reluctance of banks to extend credit to small farmers, and the reluctance of small farmers to risk everything on the word of a technician from the university.

The university radio station ran programs, prepared by the agricultural technicians, aimed at encouraging the adoption of multiple cropping. But nothing succeeds like success, and as soon as the new systems could be seen to work, farmers began to seek more information. For the successes could be spectacular. One hard-working farmer raised a crop of eggplant after the rice harvest and made enough money to buy a second-hand "Jeepney" which he now uses to transport goods and people—and further supplement his income. More commonly the farm family uses the extra money to add an extra room on the house, to buy furniture or a television, or to improve the farm.

It was not all smooth sailing, however. A nutritional study of 300 schoolchildren in six villages, and a survey of people's eating habits showed that the extra crops had brought little dietary improvement—the people were selling them, not eating them. The need for nutrition education was evident, and here the radio again proved a useful tool—although there was a lengthy period when martial law was in effect in the Philippines, and the radio station was obliged to shut down.

Training was a major component of the program from the beginning, with concentration on the principles of crop production, pest management, and economic evaluation of cropping systems. To bring home to the trainees the realities of small-scale farming,

One enterprising farmer made enough extra cash to buy one of the Philippines famous "Jeepneys".

a Canadian at IRRI devised a "simulation game," in which the players become small farmers and face the vagaries of the weather, insects, pests, and fluctuating markets in order to make a living for themselves and their families.

The game was played with enthusiasm on Saturday mornings, and for the trainees who did not come from farm backgrounds, it was said to be a sobering experience.

As the program developed, dozens of researchers and extension workers came to IRRI each year to attend courses in multiple cropping. Today they form the nucleus of the cropping systems research network that is bringing new life to farm villages from Bangladesh to Bali, and a dozen other locations throughout South and Southeast Asia.

The changes that have taken place in the world during the first decade of IDRC's existence have perhaps a greater potential for changing the direction of human development than those of any other period of history.

In political and economic terms there has been a massive shift in power. A shift that is not yet complete, and the implications of which reach far into the foreseeable future.

Socially, the world has passed through the postwar "baby boom," and the population curve has peaked. As birthrates fall and improved health increases lifespans, youth will no longer form the majority in our societies.

Technologically, the Seventies was the decade of the microchip. Where that revolution will end there is no telling, but it will affect all our lives far more profoundly than did Henry Ford's first production line.

As we enter the Eighties—IDRC's second decade—there are robot spaceships voyaging among the outer planets, the major powers have weapons enough to destroy the world many times over, as if such an absurdity were possible. And still there are people in some countries starving to death. Still there is no cure for the common tropical diseases that cripple tens of millions of people. Still more than half the world's people cannot read.

The more things change, it seems; the more they stay the same.

What will be IDRC's role in the difficult decade ahead? To some extent it will be

more of the same: more support for research to meet the needs of the developing countries, more science and technology for development. But with an added dimension, the new responsibility of providing a "focal point" for Canadian universities and research institutions in the service of international development.

There will also be an even greater sense of urgency. Just as the Pearson Report (Partners in Development) closed the optimistic Sixties, the Brandt Commission's report (Program for Survival) closed the sombre Seventies. The Brandt Commissioners warn of "the immense risks threatening mankind" not only from the collective insanity of the arms race, but also from the fundamental inequities that continue to divide our world into rich and poor, North and South, even after two "development decades."

The Brandt Report sets out a program of priorities for the next two decades. Heading the list are the needs of the world's poorest countries, particularly what the report calls "the poverty belts" of Africa and Asia. These too will remain priorities for IDRC.

Increasing urbanization and industrialization in the developing countries, however, are likely to have a growing impact on the Centre's programs. Already rural–urban drift has resulted in farm labour shortages in some regions. Agricultural mechanization is one solution, but where will the energy come from? The Eighties have been declared the International Water and Sanitation Decade by the UN—another field of research on which the Centre continues to place high priority.

The choices that lie ahead for the planners, the policymakers, the politicians, and the scientists of the Third World will not be easy ones to make. The role of the Centre will continue to be that of both an adviser and a catalyst in the search for what the Brandt Commission calls "a more humane social and economic order."

Disseminating the results of research supported by the Centre, and promoting the importance of international development research are the dual roles of the Centre's Communications Division.

Under its publications program the division produces not only scientific monographs and technical studies, but also a wide range of publications of a more popular nature aimed at informing non-specialists of research findings and their implications. A quarterly development-oriented magazine produced in three language editions, and a monthly science feature service for the news media, are among the materials produced for a more general readership.

The division currently distributes approximately 100 000 publications around the world each year. Many of these are distributed free to researchers and institutions in the developing countries. Most titles are available for purchase through booksellers in other countries.

The division's small audio-visual unit produces films for both educational and training purposes, to demonstrate research techniques, and to illustrate the work supported by the Centre. Copies of IDRC films have been distributed around the world, and several have been aired on television in Canada and abroad. A variety of other audio-visual materials is produced, and the division also maintains an extensive photo library.

In recent years the division has organized information seminars in cooperation with institutions in various regions of Canada, and provided exhibits at numerous international conferences. From time to time the division's staff have also been called upon to provide advice and assistance on communications matters to institutions in developing countries.

The following is a list of publications and films produced by the division during 1980. Catalogues of all current materials are available on request from: Communications Division, IDRC, P.O. Box 8500, Ottawa, Canada K1G 3H9.

IDRC Monographs

IDRC Annual report 1979/1980, Rapport annuel CRDI 1979/1980. Ottawa, Ont., IDRC, 1980. 126 p. IDRC-003/80e,f

L'homme et l'arbre en Afrique tropicale: trois essais sur le rôle des arbres dans l'environnement africain. Gunnar Poulsen. Ottawa, Ont., CRDI, 1980. 31 p. IDRC-101f (Also available in English IDRC-101e)

Fisheries and aquaculture in the People's Republic of China. G. I. Pritchard. Ottawa, Ont., IDRC, 1980. 32 p. IDRC-115e

Herramientas de progreso: ciencia y tecnología para el desarrollo. David Spurgeon, editor. Bogota, CIID, 1979. 214 p. IDRC-131s (Also available in English IDRC-131e and French IDRC-131f)

Acronyms relating to international development/ Liste de sigles en développement international/ Siglas relacionadas con desarrollo internacional. Compiled by Margaret Carroll. Ottawa, Ont., IDRC, 1980. 162 p. IDRC-138e,f,s

Diez anõs del Grupo Andino: memorias de un protagonista. M. Guerrero. Bogota, CIID, 1979. 432 p. IDRC-140s

Les migrations voltaïques, Tome I: importance et ambivalence de la migration voltaïques. Sidiki Coulibaly, Joel Gregory et Victor Piché. Ottawa, Ont., CRDI, 1980. 144 p. IDRC-147f

Dissemination of scientific information in the People's Republic of China. Kieran P. Broadbent. Ottawa, Ont., IDRC, 1980. 60 p. IDRC-148e

Devindex 1978: Index to 1978 literature on economic and social development/Index de la littérature sur le développement économique et social produite en 1978. Gisèle Morin-Labatut, editor/rédactrice. Ottawa, Ont., IDRC, 1980. 183 p. IDRC-149e,f

Searching: review of IDRC activities 1979. Ottawa, Ont., IDRC, 1980. 40 p. IDRC-150e (Also available in French IDRC-150f and Spanish IDRC-150s)

Cassava cultural practices: proceedings of a workshop held in Salvador, Bahia, Brazil, 18-21 March 1980. Edward J. Weber, Julio Cesar Toro M., and Michael Graham, editors. Ottawa, Ont., IDRC, 1980. 152 p. IDRC-151e

An end to pounding: a new mechanical flour milling system in use in Africa. Paul Eastman. Ottawa, Ont., IDRC, 1980. 64 p. IDRC-152e

SALUS: low-cost rural health care and health manpower training: an annotated bibliography with special emphasis on developing countries. Volume 6. Rosanna M. Bechtel, editor. Ottawa, Ont., IDRC, 1980. 157 p. IDRC-153e

Wastewater treatment and resource recovery: report of a workshop on high-rate algae ponds, Singapore, 27-29 February 1980. Ottawa, Ont., IDRC, 1980. 47 p. IDRC-154e

Rattan: a report of a workshop held in Singapore, 4-6 June 1979. Ottawa, Ont., IDRC, 1980. 76 p. IDRC-155e

International cooperative information systems: proceedings of a seminar held in Vienna, Austria, 9-13 July 1979. Ottawa, Ont., IDRC, 1980. 111 p. IDRC-156e

Le rôle des arbres au Sahel : compte rendu du colloque tenu à Dakar (Sénégal) du 5 au 10 novembre 1979. Ottawa, Ont., CRDI, 1980. 92 p. IDRC-158f

Bamboo research in Asia: proceedings of a workshop held in Singapore, 28-30 May 1980. Gilles Lessard and Amy Chouinard, editors. Ottawa, Ont., IDRC, 1980. 228 p. IDRC-159e

Technical Studies

Tropical oysters: culture and methods. D. B. Quayle. Ottawa, Ont., IDRC, 1980. 80 p. IDRC-TS17e (Also available in French IDRC-TS17f)

Science and technology for development, STPI Module 1: a review of schools of thought on science, technology, development, and technical change. F. Sagasti. Ottawa, Ont., IDRC, 1980. 56 p. IDRC-TS18e

Science and technology for development, STPI Module 2: the evolution of industry in STPI countries. O. Cardettini, F. Sagasti, G. Carrido Lecca, and F. Gonzalez Vigil. Ottawa, Ont., IDRC, 1980. 69 p. IDRC-TS19e

Science and technology for development, STPI Module 3: the evolution of science and technology in STPI countries. F. Sagasti. Ottawa, Ont., IDRC, 1980. 45 p. IDRC-TS20e

La reproduction provoquée chez les poissons: théorie et prátique. Brian J. Harvey et William S. Hoar. Ottawa, Ont., CRDI, 1980. 48 p. IDRC-TS21f (Also available in English IDRC-TS21e and Spanish IDRC-TS21s)

Teoría y práctica de la reproducción inducida en los peces. Brian J. Harvey y William S. Hoar. Bogota, CIID, 1980. 48 p. IDRC-TS21s (Also available in English IDRC-TS21e and French IDRC-TS21f)

Science and technology for development, STPI Module 4: the present situation of science and technology in the STPI countries. A. Aráoz. Ottawa, Ont., IDRC, 1980. 67 p. IDRC-TS22e

Science and technology for development, STPI Module 5: policy instruments to build up an

infrastructure for the generation of technology. A. Aráoz. Ottawa, Ont., IDRC, 1980. 59 p. IDRC-TS26e

Science and technology for development, STPI Module 7: policy instruments to define the pattern of demand for technology. S. Barrio. Ottawa, Ont., IDRC, 1980. 91 p. IDRC-TS27e

Science and technology for development, STPI Module 8: policy instruments to promote the performance of S and T activities in industrial enterprises. F. Sagasti. Ottawa, Ont., IDRC, 1980. 27 p. IDRC-TS28e

Science and technology for development, STPI Module 9: policy instruments for the support of industrial science and technology activities. S. Barrio, K. M. Chung, and A. Tillett. Ottawa, Ont., IDRC, 1980. 55 p. IDRC-TS29e

Science and technology for development, STPI Module 10: technical change in industrial branches. F. Sercovich. Ottawa, Ont., IDRC, 1980. 47 p. IDRC-TS31e

Science and technology for development, STPI Module 11: technology behaviour of industrial enterprises. F. Sercovich. Ottawa, Ont., IDRC, 1980. 59 p. IDRC-TS32e

Science and technology for development, STPI Module 6: policy instruments for the regulation of technology imports. Ottawa, Ont., IDRC, 1980. 75 p. IDRC-TS33e

Science and technology for development, STPI Module 12: case studies on technical change. F. Sercovich. Ottawa, Ont., IDRC, 1980. 35 p. IDRC-TS34e

Other Publications

The IDRC Reports/Le CRDI Explore/El CIID Informa

(Michelle Hibler, Editor-in-chief/rédactrice en chef)

Published in three separate language editions, this is a quarterly magazine of report and comment on the work supported by IDRC and on related activities in the field of international development. Total circulation of the English, French,and Spanish editions is about 12 000 per issue, of which approximately 50 percent is to developing countries, 40 percent within Canada, and the remainder to other industrialized countries.

The magazine is published in January, April, July, and October, and is available through the Centre's Communications Division.

IDRC Features/Reportage CRDI

This monthly news feature service on scientific, technical, and educational subjects pertinent to development, is provided free-of-charge to selected newspapers and magazines in the developing world. During the past year 36 articles, many of them written by IDRC staff, others by selected contributors, were distributed in English and French to some 300 publications in 74 countries. Although it has not been possible to obtain a complete record of the number of *IDRC Features* actually published, it is known that the series is widely used and appreciated, with clippings and comments being received from Argentina to Zambia.

IDRC library bulletin/Bulletin de la bibliothèque du CRDI, Ottawa, IDRC/CRDI.

Films

Fish by-catch . . . bonus from the sea.
Shrimp trawlers dump millions of tons of edible fish into the sea every year. This film shows how one country—Guyana—set about preventing some of that waste of food, and succeeded. Produced and directed by Neill McKee. 16 mm colour, 13 minutes. (Also available in French and Spanish.)

Choices.
This film illustrates the wide variety of approaches being tried by researchers and planners of the Third World in their efforts to harness science and technology to meet their development goals. Produced and directed by Neill McKee. 16 mm colour, 28 minutes. (Also available in French.)

A message from African healers.
This film is a documentary about traditional medicine in Zaire. It is a synthesis of two longer films made by researchers of the Scientific Research Institute of Zaire as part of an IDRC-sponsored study. Produced by Neill McKee. 16 mm colour, 25 minutes. (Also available in French.)

Board of Governors

Allison A. Ayida
Lagos, Nigeria

Pierre Bauchet
Paris, France

Gelia T. Castillo
Manila, Philippines

Norman T. Currie
Toronto, Canada

Frank A. DeMarco
Windsor, Canada

Liliane Filion-Laporte
Vice-Chairman of the Board of Governors
Montreal, Canada

Allan E. Gotlieb
Ottawa, Canada

Ivan L. Head
President and Chief Executive Officer
Ottawa, Canada

Carl-Göran Heden
Stockholm, Sweden

Felipe Herrera
Santiago, Chile

Francis Keppel
Cambridge, USA

David J. Lawless
Winnipeg, Canada

J. Maurice Leclair
Montreal, Canada

Louis H. Lorrain
Hudson, Canada

Hadj Mokhtar Louhibi
Algiers, Algeria

The Honourable Donald S. Macdonald
Chairman of the Board of Governors
Toronto, Canada
(Resigned: 26 November 1980)

Marcel Massé
Ottawa, Canada

The Honourable Rex. M. Nettleford, O.M.
Kingston, Jamaica

A. Jamil Nishtar
Islamabad, Pakistan

John B. Stewart
Antigonish, Canada

Sir Geoffrey Wilson
Oxford, England

Officers of the Centre

Ivan L. Head
President

Raymond J. Audet
Treasurer

Ernest Corea
Director, Cooperative Programs

John Gill
Director, Health Sciences

Joseph H. Hulse
Director, Agriculture, Food and Nutrition Sciences

Nihal Kappagoda
Vice-President, Planning

Reginald MacIntyre
Director, Communications

James C. Pfeifer
Secretary and General Counsel

David W. Steedman
Director, Social Sciences

John E. Woolston
Director, Information Sciences

Regional Directors

Asia (Singapore)
Jingjai Hanchanlash

East Africa (Nairobi)
R. Bruce Scott

West Africa (Dakar)
Lumpungu Kamanda

Middle East and North Africa (Cairo)
Fawzy Kishk

Latin America (Bogota)
L. Fernando Chaparro